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[0022] Next, as shown in Fig. 3, a resin adhesive 60 is coated so as to cover the portion behind the groove 50 of the substrate 22, the portion behind the groove 50 of the polarization plane maintaining fiber 30, and the covering part made of resin 42 in the recessed part 32. Since the resin adhesive 60 flows into the groove 50, the resin adhesive 60 does not flow out in front of the groove 50. To secure sufficient adhesion without the resin adhesive 60 flowing out in front of the groove 50, it is necessary for the resin adhesive 60 to sufficiently flow into the groove 50. For such a purpose, it is preferable that the groove 50 has a depth d of 0.6 mm or more and a width w of 0.6 mm or more. In the present example, the depth d was set to 1 mm, and the width d was set to 0.7 mm.

[0023] Incidentally, after the resin adhesive 60 being coated, having the angle of the polarization plane of the polarization plane maintaining fiber 41 was roughly adjusted. As the resin adhesive 60, Epotech 353ND was used.

[0024] Next, as shown in Fig. 4, the holding member 24 is disposed above the polarization plane maintaining fiber 41. At this time, the holding member 24 is disposed so that the side plane part 24a of the holding member 24, the side plane part 22a of the substrate, and the end face 41a of the polarization plane maintaining fiber 41 may be present in the same plane.

[0025] The polarization plane of the polarization plane maintaining fiber 41 is adjusted in the predetermined direction

Appendix A

with applying lower pressure to the holding member 24 from above. This adjustment of the polarization plane can be conducted by one of a method in which the direction of the stress-applied portion 46 is adjusted to have a predetermined angle with observing the end face 41a of the polarization plane maintaining fiber 41 with a CCD camera and a method in which an optical system is assembled by arranging a polarizer and a photodetector in front and at the back of the optical fiber array, actually causing light incidence, and adjusting the polarization plane with measuring the polarization direction of outgoing radiation light. In this case, since the groove 50 is provided in the present example, the outward flow of the resin adhesive from the side plane parts 22a and 24a and the adhesion of the resin adhesive to the end face 41a of the polarization plane maintaining fiber 41 can be prevented. Therefore, in either adjusting method described above, the polarization plane can easily be adjusted.

[0026] Subsequently, with applying higher pressure to the holding member 24 from above, the polarization plane maintaining fiber 41, the substrate 22, and the holding member 24 are fixed by the resin adhesive 60 being cured to obtain an optical fiber array 20. Even in this case, since the groove 50 is provided, the outward flow of the resin adhesive from the side plane parts 22a and 24a and the adhesion of the resin adhesive to the end face 41a of the polarization plane maintaining fiber 41 can be prevented. Therefore, polishing for removing the resin adhesive 60 is not necessary after the assembly.

Appendix A